

IN THE CLAIMS:

1. (currently amended) A method for generating an estimate of inhomogeneity, said method comprising:

acquiring an image;

generating a threshold value using the acquired image;

generating a first estimate of inhomogeneity using the acquired image;

generating a second estimate of inhomogeneity using the same acquired image used to generate the first estimate of inhomogeneity; and

generating a final estimate of inhomogeneity for the acquired image using at least the first and second estimates and the threshold value.

2. (original) A method in accordance with Claim 1 wherein said generating a first estimate comprises generating a first estimate by filtering an image  $g_m$ , said generating a second estimate comprises generating a second estimate of inhomogeneity using an operation other than filtering on an image  $g_m$ .

3. (original) A method in accordance with Claim 2 wherein said generating a second estimate comprises generating a second estimate of inhomogeneity by dividing  $g_m$  by a threshold value of  $g_m$  (threshold  $g_m$ ).

4. (original) A method in accordance with Claim 3 wherein said generating a second estimate comprises generating a second estimate of inhomogeneity by dividing  $g_m$  by threshold  $g_m$  where threshold  $g_m$  is calculated in accordance with:

if  $(SD/BI) < A$ , then the threshold  $g_m = FI * (BI/FI + B)$ ;

else if  $(SD/BI) < B$ , then the threshold  $g_m = FI * (BI/FI + D)$ ;

else if  $(SD/BI) \leq C$ , then the threshold  $g_m = BI$ ;

else if  $((SD/BI) > C) \text{ AND } (BI/FI) < E$ , then the threshold  $g_m = FI * G$ ;

else {

the threshold  $g_m = FI * (BI/FI - H)$ ;

if the threshold  $g_m < 0.0$ , then the threshold  $g_m = FI * I$ ;

}

where FI is foreground intensity computed as an average of structure regions, BI is background intensity computed as an average of non-structure regions having intensity less than FI, SD is a standard deviation of non-structure regions, and A, B, C, D, E, G, H, I are scalars with  $A < B < C$ .

5. (original) A method in accordance with Claim 4 wherein A is about 0.2, B is about 0.5, C is about 1.0, D is about 0.2, E is about 0.2, G is about 0.2, and H is about 0.1.

6. (original) A method in accordance with Claim 2 wherein said generating a first estimate by filtering an image  $g_m$  comprises generating a first estimate by filtering an image  $g_m$  with a low pass filter.

7. (original) A method in accordance with Claim 1 wherein said generating a first estimate comprises generating a first estimate by filtering an image  $g_m$  with a first filter, said generating a second estimate comprises generating a second estimate of inhomogeneity by filtering an image  $g_m$  with a second filter different than the first filter.

8. (original) A method in accordance with Claim 1 wherein said generating a first estimate comprises generating a first estimate by filtering an image  $g_m$  with a first low pass filter, said generating a second estimate comprises generating a second estimate of inhomogeneity by filtering an image  $g_m$  with a second low pass filter different than the first filter.

9. (original) A method in accordance with Claim 1 wherein said generating a first estimate comprises generating a first estimate by filtering an image  $g_m$  with a low pass filter, said generating a second estimate comprises generating a second estimate of inhomogeneity by filtering an image  $g_m$  with a band pass filter.

10. (original) A method in accordance with Claim 1 wherein said generating a final estimate of inhomogeneity using  $h(x,y) = \theta_1 h_1 + \theta_2 h_2 + \dots + \theta_N h_N$  comprises generating a final estimate of inhomogeneity, when  $N=2$ , using  $h = h_1 + (h_2 - h_1) * \theta$  wherein

$h$  is the final estimate,  $h_1$  is the first estimate,  $h_2$  is the second estimate, and  $\theta$  is a scalar such that  $0 < \theta < 1$ .

11. (original) A method in accordance with Claim 10 wherein generating a second estimate comprises generating a second estimate of inhomogeneity by dividing an image  $g_m$  by a threshold value of  $g_m$  (threshold  $g_m$ ) where threshold  $g_m$  is calculated in accordance with:

if  $(SD/BI) < 0.2$ , then the threshold  $g_m = FI * (BI/FI + 0.2)$ ;

else if  $(SD/BI) < 0.5$ , then the threshold  $g_m = FI * (BI/FI + 0.1)$ ;

else if  $(SD/BI) \leq 1.0$ , then the threshold  $g_m = BI$ ;

else if  $((SD/BI) > 1.0) \text{ AND } (BI/FI) < 0.2$ , then the threshold  $g_m = FI * 0.2$ ;

else {

threshold  $g_m = FI * (BI/FI - 0.1)$ ;

if the threshold  $g_m < 0.0$ , then the threshold  $g_m = FI * 0.1$ ;

}

where  $FI$  is foreground intensity computed as an average of structure regions,  $BI$  is background intensity computed as an average of non-structure regions having intensity less than  $FI$ , and  $SD$  is a standard deviation of non-structure regions.

12. (original) A method in accordance with Claim 9 wherein said generating a final estimate comprises generating a final estimate using  $h(x,y) = \theta_1 h_1 + \theta_2 h_2 + \dots + \theta_N h_N$ , wherein  $0 < \theta_1, \theta_2, \dots, \theta_N < 1$ ,  $\theta_1 + \theta_2 + \dots + \theta_N = 1$ ,  $h_1$  is the first estimate,  $h_2$  is the second estimate,  $h_N$  is the  $N$ th estimate,  $h$  is the final estimate, and  $N \geq 2$ .

13. (currently amended) A magnetic resonance imaging (MRI) system comprising:

a main magnet configured to generate a substantially uniform magnetic field;

a radio frequency pulse generator configured to excite the magnetic field;

a gradient field generator configured to generate gradients extending in different directions in the magnetic field;

a receiver configured to receive magnetic field magnetic resonance (MR) signals representative of an object; and

a computer operationally coupled to said receiver, said computer configured to:

acquire an image;

generate a threshold value using the acquired image;

generate a first estimate of inhomogeneity using the acquired image;

generate a second estimate of inhomogeneity using the same acquired image used to generate the first estimate of inhomogeneity; and

generate a final estimate of inhomogeneity for the acquired image using at least the first and second estimates and the threshold value.

14. (original) A MRI system in accordance with Claim 13 wherein said computer further configured to:

generate the first estimate by filtering an image  $g_m$ ; and

generate the second estimate of inhomogeneity using an operation other than filtering.

15. (original) A MRI system in accordance with Claim 14 wherein said computer further configured to generate the second estimate of inhomogeneity by dividing an image  $g_m$  by a threshold value of  $g_m$  (threshold  $g_m$ ).

16. (original) A MRI system in accordance with Claim 15 wherein said computer further configured to calculate threshold  $g_m$  in accordance with:

if  $(SD/BI) < 0.2$ , then the threshold  $g_m = FI * (BI/FI + 0.2)$ ;

else if  $(SD/BI) < 0.5$ , then the threshold  $g_m = FI * (BI/FI + 0.1)$ ;

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else if  $(SD/BI) \leq 1.0$ , then the threshold  $g_m = BI$ ;

else if  $((SD/BI) > 1.0)$  AND  $(BI/FI) < 0.2$ , then the threshold  $g_m = FI * 0.2$ ;

else {

the threshold  $g_m = FI * (BI/FI - 0.1)$ ;

if the threshold  $g_m < 0.0$ , then the threshold  $g_m = FI * 0.1$ ;

}

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where FI is foreground intensity computed as an average of structure regions, BI is background intensity computed as an average of non-structure regions having intensity less than FI, and SD is a standard deviation of non-structure regions.

17. (original) A MRI system in accordance with Claim 14 wherein said computer further configured to generate the first estimate by filtering an image  $g_m$  with a low pass filter.

18. (original) A MRI system in accordance with Claim 13 wherein said computer further configured to:

generate the first estimate by filtering an image  $g_m$  with a first filter; and

generate the second estimate by filtering an image  $g_m$  with a second filter different than the first filter.

19. (original) A MRI system in accordance with Claim 13 wherein said computer further configured to:

generate the first estimate by filtering an image  $g_m$  with a first low pass filter;

and

generate the second estimate by filtering an image  $g_m$  with a second low pass filter different than the first low pass filter.

20. (original) A MRI system in accordance with Claim 13 wherein said computer further configured to:

generate the first estimate by filtering an image  $g_m$  with a low pass filter; and  
generating the second estimate by filtering an image  $g_m$  with a band pass filter.

21. (original) A MRI system in accordance with Claim 13 wherein said computer further configured to generate the final estimate of inhomogeneity using the first and second estimates in accordance with  $h = h_1 + (h_2 - h_1) * \theta$  wherein  $h$  is the final estimate,  $h_1$  is the first estimate,  $h_2$  is the second estimate, and  $\theta$  is a scalar such that  $0 < \theta < 1$ .

22. (original) A MRI system in accordance with Claim 21 wherein said computer further configured to:

generate the first estimate by filtering an image  $g_m$ ; and

generating the second estimate of inhomogeneity using an operation other than filtering.

23. (original) A MRI system in accordance with Claim 22 wherein said computer further configured to: generate the second estimate of inhomogeneity by dividing an image  $g_m$  by a threshold value of  $g_m$  (threshold  $g_m$ ) where threshold  $g_m$  is calculated in accordance with:

if  $(SD/BI) < 0.2$ , then the threshold  $g_m = FI * (BI/FI + 0.2)$ ;

else if  $(SD/BI) < 0.5$ , then the threshold  $g_m = FI * (BI/FI + 0.1)$ ;

else if  $(SD/BI) \leq 1.0$ , then the threshold  $g_m = BI$ ;

else if  $((SD/BI) > 1.0) \text{ AND } (BI/FI) < 0.2$ , then the threshold  $g_m = FI * 0.2$ ;

else {

the threshold  $g_m = FI * (BI/FI - 0.1)$ ;

if the threshold  $g_m < 0.0$ , then the threshold  $g_m = FI * 0.1$ ;

}

where FI is foreground intensity computed as an average of structure regions, BI is background intensity computed as an average of non-structure regions having intensity less than FI, and SD is a standard deviation of non-structure regions.

24. (original) A MRI system in accordance with Claim 21 wherein said computer further configured to:

generate the first estimate by filtering an image  $g_m$  with a first filter; and

generate the second estimate by filtering an image  $g_m$  with a second filter different than the first filter.

25. (currently amended) A computer readable medium encoded with a program configured to instruct a computer to:

acquire an image;

generate a threshold value using the acquired image;

generate a first estimate of inhomogeneity using the acquired image;

generate a second estimate of inhomogeneity using the same acquired image used to generate the first estimate of inhomogeneity; and

generate a final estimate of inhomogeneity for the acquired image using at least the first and second estimates and the threshold value.

26. (original) A medium in accordance with Claim 25 wherein said program further configured to instruct the computer to:

generate the first estimate by filtering an image  $g_m$ ; and

generate the second estimate of inhomogeneity using an operation other than filtering.

27. (original) A medium in accordance with Claim 25 wherein said program further configured to instruct the computer to generate the second estimate of inhomogeneity by dividing an image  $g_m$  by a threshold value of  $g_m$  (threshold  $g_m$ ) where threshold  $g_m$  is calculated in accordance with:

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if (SD/BI) < 0.2, then the threshold  $g_m = FI * (BI/FI + 0.2)$ ;

else if (SD/BI) < 0.5, then the threshold  $g_m = FI * (BI/FI + 0.1)$ ;

else if (SD/BI)  $\leq$  1.0, then the threshold  $g_m = BI$ ;

else if ((SD/BI) > 1.0) AND (BI/FI) < 0.2, then the threshold  $g_m = FI * 0.2$ ;

else {

the threshold  $g_m = FI * (BI/FI - 0.1)$ ;

if the threshold  $g_m < 0.0$ , then the threshold  $g_m = FI * 0.1$ ;

}

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where FI is foreground intensity computed as an average of structure regions, BI is background intensity computed as an average of non-structure regions having intensity less than FI, and SD is a standard deviation of non-structure regions.

28. (original) A medium in accordance with Claim 25 wherein said program further configured to instruct the computer to:

generate the first estimate by filtering an image  $g_m$  with a first filter; and

generate the second estimate by filtering an image  $g_m$  with a second filter different than the first filter.

29. (original) A medium in accordance with Claim 28 wherein the image  $g_m$  filtered with the first filter is the same image  $g_m$  filtered with the second filter.

30. (original) A medium in accordance with Claim 28 wherein the image  $g_m$  filtered with the first filter is an image different than the image  $g_m$  filtered with the second filter.

31. (original) A medium in accordance with Claim 25 wherein said program further configured to instruct the computer to generate the final estimate of inhomogeneity, using the first and second estimates in accordance with  $h = h_1 + (h_2 - h_1) * \theta$  wherein h is the



final estimate,  $h_1$  is the first estimate,  $h_2$  is the second estimate, and  $\theta$  is a scalar such that  $0 < \theta < 1$ .

32. (original) A medium in accordance with Claim 31 wherein said program further configured to instruct the computer to generate the second estimate of inhomogeneity by dividing an image  $g_m$  by a threshold value of  $g_m$  (threshold  $g_m$ ) where threshold  $g_m$  is calculated in accordance with:

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if (SD/BI) < 0.2, then the threshold  $g_m = FI * (BI/FI + 0.2)$ ;

else if (SD/BI) < 0.5, then the threshold  $g_m = FI * (BI/FI + 0.1)$ ;

else if (SD/BI)  $\leq$  1.0, then the threshold  $g_m = BI$ ;

else if ((SD/BI) > 1.0) AND (BI/FI) < 0.2, then the threshold  $g_m = FI * 0.2$ ;

else {

the threshold  $g_m = FI * (BI/FI - 0.1)$ ;

if the threshold  $g_m < 0.0$ , then the threshold  $g_m = FI * 0.1$ ;

}

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where FI is foreground intensity computed as an average of structure regions, BI is background intensity computed as an average of non-structure regions having intensity less than FI, and SD is a standard deviation of non-structure regions.